

Example 7-Evaluation of seawater viscosity

- [72] Xanthan produced by strain XWCM-1/pBBRS-BC was evaluated for seawater viscosity (SWV), compared to a commercial xanthan product (XanvisTM). Typical SWV for XanvisTM xanthan product is in the range of 18 to 22.
- [74] Seawater viscosity was determined using the following procedure. Seawater solution was prepared by dissolving 41.95 g of sea salt (ASTM D1141-52, from Lake Products Co., Inc. Maryland Heights, Missouri) in 1 liter deionized water. 300 ml of seawater solution was transferred to a mixing cup that was attached to a Hamilton-Beach 936-2 mixer (Hamilton-Beach Div., Washington, D.C.). The mixer speed control was set to low and a single fluted disk attached to the mixing shaft. At the low speed setting, the mixer shaft rotates at approximately 4,000- 6,000 rpm. 0.86 g of biogum product was slowly added over 15-30 seconds to the mixing cup and allowed to mix for 5 minutes. The mixer speed control was set to high ($11,000 \pm 1,000$ rpm) and the test solution was allowed to mix for approximately 5 minutes. The mixture was allowed to mix for a total of 45 minutes, starting from time of biogum product addition. At the end of the 45 minutes mixing time, 2-3 drops of Bara Defoam (NL Baroid/NL industries, Inc., Houston, TX) was added and stirring was continued for an additional 30 seconds.
- [75] The mixing cup was removed from the mixer and immersed in chilled water to lower the fluid's temperature to $25 \pm 0.5^\circ\text{C}$. In order to insure a homogeneous solution, the solution was re-mixed after cooling for 5 seconds at $11,000 \pm 1,000$ rpm. The solution was transferred from the mixing cup to 400 ml Pyrex beaker and Fann viscosity (Fann Viscometer, Model 35A) was measured. This was accomplished by mixing at low speed (about 3 rpm). The reading was allowed to stabilize and then the shear stress value was read from dial and recorded as the SW value at 3 rpm.

Table 5. Quality of XWCM-1/pBBR5-BC xanthan and XanvisTM xanthan

Sample	SWV DR ^a
XWCM-1/pBBR5-BC	29 30
Xanvis xanthan	22